

REMARKS

Claims 1-33 and 37-52 are pending in the application. Claims 1 and 14 are currently amended. Claims 34-36 have been cancelled. Applicants respectfully request for allowance of all the pending claims based on following discussions.

Rejections under 35 USC 112

Claims 1-33 and 37-52 are rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. Specifically, claims 1 and 14 include the limitation of a fluid stream evacuated from an equipment chamber, and Examiner asserts that such limitation is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *See, the Final Office Action, page 2, paragraph 3.*

In response to the rejections, claims 1 and 14 are amended by deleting the limitation of a fluid stream evacuated from an equipment chamber. As such, Applicants respectfully request that the rejections against claims 1 and 14 under 35 USC 112 be withdrawn.

Claims 2-13, 15-33, and 37-52 are rejected under 35 USC 112, first paragraph, because of their dependency on claims 1 and 14. For the reasons discussed above, Applicants respectfully request that the rejections against claims 2-13, 15-33, and 37-52 be withdrawn, as well.

Rejections under 35 USC 103

Claims 1-33 and 37-52 are rejected under 35 USC 103(a) as being unpatentable over US Patent No. 5,707,213 to Conrad (hereinafter referred to as “Conrad”) in view of US Patent No. 6,394,747 to Hablanian (hereinafter referred to as “Hablanian”) and US Patent No. 5,553,998 to Muhlhoff et al. (hereinafter referred to as “Muhlhoff”).

Claim 1 is directed to a vacuum pump comprising a first pumping section, a second pumping section downstream from the first pumping section, a third pumping section downstream from the second pumping section, a first pump inlet through which fluid can enter the pump and pass through each of the pumping sections towards a pump outlet, and a second pump inlet through which fluid can enter the pump and pass through only the second and the third pumping sections towards the pump outlet, wherein the third pumping section comprises a helical groove formed in a stator thereof, the second pumping section comprises a helical groove formed in a rotor thereof, and the first and second pumping sections are sized substantially the same in a radial direction, such that the second pumping section that has the helical groove formed in the rotor thereof is able to increase a pumping capacity without a corresponding increase in size, wherein the first and second pump inlets are in fluid connection with a first chamber and a second chamber upstream of the first chamber, respectively, the first chamber and the second chamber being disposed serially for enabling a stream of fluid to pass through the second chamber and first chamber sequentially, as the stream of fluid is being simultaneously drawn into the first and second pumping sections via the first and second pump inlets, respectively.

The added limitation

“the first and second pump
 inlets are in fluid connection
 with a first chamber and a
 second chamber upstream of
 the first chamber,
 respectively, the first

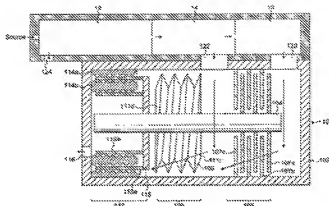


FIG. 2

chamber and the second chamber being disposed serially for enabling a stream of fluid to pass through the second chamber and first chamber sequentially, as the stream of fluid is being simultaneously drawn into the first and second pumping sections via the first and second pump inlets, respectively” is supported by the specification. For example, as shown in FIG. 2 of the present application, the first pump inlet 120 and second pump inlet 122 are in fluid connection with the first chamber 10 and the second chamber 14 upstream of the first chamber 10, respectively. The first chamber 10 and the second chamber 14 are illustrated as being disposed adjacent to each other serially. A stream of fluid flows from a source on the left of the figure to the second chamber 14 and first chamber 10, sequentially, as the vacuum pump 100 draws the stream of fluid via the second and first inlets 122 and 120, respectively.

Conrad teaches a molecular vacuum pump having a suction flange 10 and a gas outlet opening 11. *See, col. 3, lines 25-39.* A number of inlets 12, 13, and 14 are provided on the sidewall of the vacuum pump for admitting cooling gas into the pump. *Id.* The cooling gas admitted to inlets 12, 13, and 14 differ from a compressed gas

entering the pump via the suction flange 10 in that

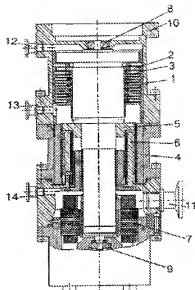
the cooling gas has a thermal conductivity larger than that of the compressed gas. *See, col. 1, line 66 – col. 2, line 4.*

Applicants respectfully submit that Conrad does not teach the limitation “the first and second pump inlets are in fluid connection with a first chamber and a second chamber upstream of the first chamber, respectively.” In Conrad, the inlets

12 and 13 are thinly described by reference to the drawing. *See, col. 3, lines 25-29.* It provides no detail as to how the cooling gas is supplied to the inlets 12 and 13. For example, it provides no teaching or suggestion that the inlet 12 and 13 are in fluid connection with any chambers external to the pump.

Moreover, Conrad does not teach or suggest “the first chamber and the second chamber being disposed serially for enabling a stream of fluid to pass through the second chamber and first chamber sequentially, as the stream of fluid is being simultaneously drawn into the first and second pumping sections via the first and second pump inlets, respectively.” Since Conrad does not teach or suggest that the inlets 12 and 13 are connected to any chambers, it cannot teach or suggest the specific arrangement of the chambers as described in the claimed invention.

Muhlhoff is relied on by Examiner for its teaching a helically threaded rotor. *See, the Final Office Action, page 4, paragraph 8.* Applicants respectfully submit that Muhlhoff does not cure the deficiencies of Conrad.



Hablanian is not relied on by Examiner in rejecting claim 1. Thus, Applicants respectfully submit that Hablanian does not cure the deficiencies of Conrad, either.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974). Since none of the cited prior art references teaches the claimed limitation “the first and second pump inlets are in fluid connection with a first chamber and a second chamber upstream of the first chamber, respectively, the first chamber and the second chamber being disposed serially for enabling a stream of fluid to pass through the second chamber and first chamber sequentially, as the stream of fluid is being simultaneously drawn into the first and second pumping sections via the first and second pump inlets, respectively,” Applicants respectfully submit that claim 1 is not obvious over the cited references, either standing alone or in combination, under 35 USC 103(a). As such, Applicants respectfully submit that claim 1, as amended, is patentable over the cited prior art references under 35 USC 103(a).

Claim 14, as amended, includes additional limitations “the first and second pump inlets are in fluid connection with a first chamber and a second chamber upstream of the first chamber, respectively, the first chamber and the second chamber being disposed serially for enabling a stream of fluid to pass through the second chamber and first chamber sequentially, as the stream of fluid is being simultaneously drawn into the first and second pumping sections via the first and second pump inlets, respectively.” For the reasons discussed above, Applicants respectfully submit that claim 14 is patentable over the cited prior art references under 35 USC 103(a).

Claims 2-13, 15-33, and 37-52 depend from claim 1 or 14 and include all the limitations recited therein. For the reasons discussed above, claims 2-13, 15-33, and 37-52 are also patentable over the cited prior art references under 35 USC 103(a), by virtue of their dependency.

CONCLUSION

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee required by the submission to deposit account number 50-4244.

Respectfully submitted,

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